

MUC-1 Tumor Antigen Agonist Epitopes for Enhancing T-cell Responses to Human Tumors A NEW CO-DEVELOPMENT OPPORTUNITY

Reference No.: E-001-2012

Keywords: Therapeutic, cancer, antigen, agonist, epitope

Technology:

The MUC-1 tumor associated antigen has been shown to be overexpressed and/or underglycosylated in a wide range of human cancers. The C-terminus region of MUC-1 (MUC-1C) has been shown to be an oncogene and has been associated with a more aggressive phenotype in several different cancers. Scientists at NIH have identified 7 new agonist epitopes of the MUC-1 tumor associated antigen. Compared to their native epitope counterparts, peptides reflecting these agonist epitopes have been shown to enhance the generation of human tumor cells, which in turn have a greater ability to kill human tumor cells endogenously expressing the native MUC-1 epitope. The agonist epitopes span both the VNTR region of MUC-1 and the C-terminus region. The epitopes encompass 2 major MHC alleles reflecting the majority of the population.

Along with the method of use, the technology encompasses the use of these agonist epitopes in peptide- and protein-based vaccines, with dendritic cells or other antigen presenting cells, or encoding sequences in DNA, viral, bacterial, yeast, or other types of vectors, or to stimulate T-cells *in vitro* for adoptive immunotherapy protocols.

Competitive Advantages:

- The agonist epitopes have been shown to be much more potent than their natural counterparts in activating human T-cells to MUC-1.
- Compared to T-cells activated with the corresponding native epitopes, the T-cells activated by the agonist epitopes lyse tumor cells to a greater extent.
- The technology can be used in a wide range of cancer vaccine platforms and in adoptive immunotherapy protocols.
- The technology can be combined with existing vaccine platforms including those currently showing patient benefit, as well as with other therapeutic modalities.

Potential Commercial Applications

- As a therapeutic vaccine to enhance patient's immune responses to a range of human cancers
- As a preventive vaccine for patients with preneoplastic conditions or a high risk of developing cancer
- As a preventive vaccine for cancers
- For *in vitro* stimulation of lymphocytes for adoptive transfer protocols for cancer

R&D Status: pre-clinical *in vitro*

IP Status: U.S. Patent Application No. 61/582,723 filed (01/03/2012)

Related Technologies:

PCT Application No. PCT/US98/03693, PCT Application No. PCT/US2004/41921

Please submit an information request form referencing invention no. [E-xxx-yyyy] on <http://techtransfer.cancer.gov>, or contact:

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